

AN ANNOTATED CHECKLIST OF THE FLEAS OF SOUTH DAKOTA (SIPHONAPTERA)^{1,2}

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ABSTRACT: Collecting data are reported for 35 species of Siphonaptera from South Dakota. New state records and ecological data are presented for the flea species *Ctenophthalmus pseudagyrtus pseudagyrtus* Baker. *Ceratophyllus celsus celsus* Jordan. *Cer. niger* C. Fox. *Cer. styx riparius* (Jordan and Rothschild), and *Cer. petrocheliodoni* Wagner.

Distribution studies of many Nearctic insect species are impeded by a scarcity of information. Except for the mosquitoes, there is no complete list of potential vectors of disease in South Dakota. Fleas are known vectors of sylvatic plague in nature, and even though human cases of plague have not been reported in the state, cases have been reported from most of the states west and south of South Dakota. Results of periodic collecting of fleas from 1977 to 1982 are presented in addition to references to known published accounts. Small mammals in most cases were live-trapped followed by light etherization in a plastic bag enabling the fleas to leave their hosts. Following preservation in 80% alcohol, parasites were cleared in 10% KOH, washed, and subjected to ascending concentration of alcohol. They were then transferred to xylene before mounting in Canada balsam. Specimens are in the author's personal collection unless indicated otherwise.

FAMILY HYSTRICHOPSYLLIDAE

Genus *Catallagia* Rothschild

Catallagia decipiens Rothschild. Ex. *Peromyscus maniculatus*, Black Hills; ex. *Microtus pennsylvanicus*, 18 July 1977, Spearfish Canyon, Lawrence County. First reported in South Dakota by Turner (1974).

Genus *Ctenophthalmus* Kolenati

Ctenophthalmus pseudagyrtus pseudagyrtus Baker NEW STATE RECORDS Ex. *Tamias striatus*, 20 May 1979, Hartford Beach State Park, Roberts County.

Genus *Eptedia* Jordan

Eptedia wenmanni (Rothschild). Ex. *P. maniculatus*, Clay County; Ex. *Microtus longicaudus*, *P. maniculatus*, 30 Sept. 1978, Spearfish Canyon, Lawrence County. First reported from central South Dakota by Benton (1955).

Genus *Hystrichopsylla* Taschenberg

Hystrichopsylla dippiei Rothschild. Ex. *P. maniculatus*, 18 Sept. 1977, Spearfish Canyon, Lawrence County. First reported in Custer County by Holland (1957) as *H. d. dippiei*.

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FAMILY ISCHNOPSYLLIDAE

Genus *Myodopsylla* Jordan and Rothschild

Myodopsylla gentilis Jordan and Rothschild. ex. *Myotis lucifigus*, 21 August 1978, Ralph, Harding County. Reported earlier from South Dakota by Anderson and Jones, Jr. (1971) Ex. *Myotis volans* and *M. lucifigus* in Harding County. *Myodopsylla insignis* (Rothschild). Ex. *M. lucifigus*, 21 Aug. 1978, Ralph, Harding County. Reported from South Dakota earlier by Anderson and Jones (1971) Ex. *M. lucifigus*.

FAMILY LEPTOPSYLLIDAE

Genus *Peromyscopsylla* I. Fox

Peromyscopsylla catatina (Jordan). Ex. *M. pennsylvanicus*, 18 July 1977 and 18 Sept. 1978, Spearfish Canyon, Lawrence County. Reported in South Dakota by Easton (1981). *Peromyscopsylla hesperomys* (Baker). Ex. *P. maniculatus*, 20 Aug. 1977, 18 Sept. 1977, 1 Oct. 1978; Spearfish Canyon, Lawrence County; Ex. *P. maniculatus*, 26 March 1978, Badlands Nat. Park, Jackson County. Johnson and Traub (1954) reported subspecific intergrades of this flea from *Clethrionomys gapperi* and *P. maniculatus* in Custer County and from *P. maniculatus* in Pennington and Meade Counties.

FAMILY CERATOPHYLLIDAE

Genus *Ceratophyllus* Curtis

Ceratophyllus celsus celsus Jordan. NEW STATE RECORD. Nest of *Petrochelidon pyrrhonota*, 4 May 1980, nr. Redig, Harding County.

Ceratophyllus niger C. Fox. NEW STATE RECORD. Nest of *Phalacrocorax auritus*, 4 July 1926, Lake Poinsett, Hamlin County; 16 Aug. 1977, Waubay Nat. Wildlife Ref., Day County.

Ceratophyllus styx riparius Jordan and Rothschild. NEW STATE RECORD. Nest of *Riparia riparia*, Aug. 1977, 1 mi. N. Miller, Hand County.

Ceratophyllus petrochelidoni Wagner. NEW STATE RECORD. Nest of *P. pyrrhonota*, 10 Oct. 1977, Badlands Nat. Park, Jackson County.

Genus *Foxella* Wagner

Foxella ignota (Baker). Ex. *Thomomys talpoides*, Harding County, Ex. *Mustela* sp. 29 Oct. 1921, Brookings County; First reported from Harding County by Anderson and Jones (1971).

Genus *Monopsyllus* Kolenati

Monopsyllus eumolpi eumolpi (Rothschild). Ex. *Eutamias minimus*, 1 Oct. 1978, Spearfish Canyon, Lawrence County. Earlier reported in Custer County by Johnson (1961), and from *E. minimus* in Harding County. (Anderson and Jones, Jr. 1971).

Monopsyllus exilis (Jordan). Ex. *Onychomys* sp. from Jones County first reported by Johnson (1961).

Monopsyllus wagneri (Baker). Ex. *Zapus hudsonicus*, 29 May 1978, Spearfish Canyon, Lawrence County. Ex. *P. maniculatus*, 8 Oct. 1977; Ex. *M. pennsylvanicus*, 30 July 1978, Spearfish Canyon, Lawrence County. First reported in South Dakota by Johnson (1961).

Genus *Opisocrostis* Jordan

Opisocrostis bruneri (Baker). Ex. *Spermophilus franklinii*, 30 April 1977, Astoria, Brookings County; Ex. *S. tridecemlineatus*, April 1915 and Sept. 1935, Brookings County in the State University Collection. First reported by Prince (1943) from Potter, Brown and Spink Counties.

Opisocrostis hirsutus (Baker) Ex. *Cynomys ludovicianus*, April-June 1977, Wind Cave National Park, Custer County, J. Hoogland; Ex. *C. ludovicianus* 26 May 1979, 2 miles west of New Underwood, Pennington County. King (1955) was first to report this species from prairie dogs in the Black Hills. Boddicker (1968) also reported it from *Mustela nigripes* in Bennett and Mellette Counties.

Opisocrostitis tuberculatus cynomuris Jellison. Ex. *Cynomys ludovicianus*, April-June 1977, Wind Cave National Park, Custer County. J. Hoogland; Ex. *C. ludovicianus* 26 May 1979, 2 miles west of New Underwood, Pennington County.

Genus *Megabothris* Jordan

Megabothris quirini (Rothschild). Ex. *Zapus hudsonicus*, 29 May 1978, Spearfish Canyon, Lawrence County. First reported in South Dakota by Easton (1981).

Genus *Malareus* Jordan

Malareus telchinum (Rothschild). Ex. *Zapus hudsonicus* 26 May 1977, 12 mi. S. Spearfish, Lawrence County; Ex. *P. maniculatus*, 6 May 1978. First reported by Turner (1974) in the Black Hills from *Reithrodontomys megalotis*.

Genus *Nosopsyllus* Jordan

Nosopsyllus fasciatus (Bosc.) Ex. *Rattus norvegicus*, (no date), Brookings Brookings County. South Dakota State University Insect Collection.

Genus *Orchopeas* Jordan

Orchopeas caedens (Jordan). Ex. *Tamiasciurus hudsonicus*, 17 May 1955, Sylvan Lake, Custer County, Jellison and Kohls. Unpublished record of the Rocky Mountain Laboratory, Hamilton, Montana. Ex. *T. hudsonicus*, 5 May 1979, 10 mi. S. Pluma, Lawrence County; Ex. *T. striatus*, 20 May 1979, Hartford Beach State Park, Roberts County. First reported by Coffman and Balsbaugh Jr. (1971) in Brookings County from the nest of *Sciurus niger*.

Orchopeas howardi (Baker) Ex. *Sciurus niger* 16 December 1978, 9 miles south, 2 miles west of Brookings, Brookings County. W. Soeffing. First published record in South Dakota by Wilson (1978) from the same host in McCook County.

Orchopeas leucopus (Baker). Ex. *Microtus ochrogaster*, and *P. maniculatus* from the Black Hills was reported by Turner (1974). *Orchopeas sexdentatus* (Rothschild). Ex. *P. maniculatus*, Black Hills, Lead. Ex. *N. cinerea*, 14 Aug. 1979, Spearfish Canyon, Lawrence County. First published records by Turner (1974) from *N. cinerea* southwest of Lead.

Genus *Thrassis* Jordan

Thrassis stanfordi Wagner. Ex. *Marmota flaviventris*, 5 May 1979, 1 mi. N. Deadwood, Lawrence County. First reported in Custer County by Stark in 1970.

Thrassis bacchi (Rothschild). Ex. *M. pennsylvanicus*, 10 May 1977 2 mi. NE Watertown, Codington County. First reported by Prince (1943) from Potter, Brown and Spink Counties from *S. richardsonii*, *S. franklini* and *S. tridecemlineatus*.

Thrassis fotus (Jordan). Ex. *S. tridecemlineatus*, Wind Cave National Park, Custer County (Turner, 1974). First reported by Stark (1970) at two locations near the center of the state.

FAMILY PULICIDAE

Genus *Ctenocephalides* Stiles and Collins

Ctenocephalides canis (Curtis). Ex. Dog, 15 July 1935, Huron, Beadle County. Ex. Dog, 14 July 1914, Brookings County, O. Larson.

Ctenocephalides felis (Bouche). Ex. Cat, 15 July 1935, Brookings, Brookings County, 26 June 1941, Aberdeen, Brown County; 15 July 1935, Huron, Beadle County. Ex. House, Sioux Falls, Minnehaha County, South Dakota State University Insect Collection.

Genus *Cediopsylla* Jordan

Cediopsylla inequalis (Baker). Ex. *Sylvilagus audubonii*. First reported by Anderson and Jones, Jr. (1971) in Harding County.

Cediopsylla simplex (Baker). First reported by Kohls (1940) Ex. *Sylvilagus floridanus*, in Brookings County, South Dakota.

Genus *Euhoplopsyllus* Ewing

Euhoplopsyllus affinis (Baker). Ex. *Lepus townsendi*, Brookings, Brookings County; Ex. *S. floridanus*, 15 April 1936, Brookings County, D.E.H. First published record was reported as *Hoplopsyllus affinis* by Kohls (1940).

Genus *Pulex* Linnaeus

Pulex irritans (Linnaeus). Home, no date, Brookings, Brookings County; Ex. *Canis latrans* pup. 16 May 1955; Edgemont, South Dakota, Fall River County, Kohls and Jellison. Unpublished record of the Rocky Mountain Laboratory, Hamilton, Montana. Ex. *C. latrans*, 12 Oct. 1976, Harding County. E. Schitoskey; Ex. *Vulpes velox*, Aug. 1978, Shannon County. J. Sharp.

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LITERATURE CITED

- Anderson, K.W. and J.K. Jones, Jr. 1971. Mammals of Northwestern South Dakota. University of Kansas, Publ. Mus. Nat. Hist. 19(5) 361-93.
- Benton, A.H. 1955. The taxonomy and biology of *Epitedia wenmanni* (Rothschild, 1904) and *E. testor* (Rothschild, 1915) (Hystrichopsyllidae: Siphonaptera). J. Parasit. 41(5): 491-95.
- Boddicker, M.L. 1968. Parasites of the black-footed ferret. Proc. S.D. Acad. Science. 47: 141-148.
- Coffman, C.C. and E.U. Balsbaugh. 1971. The immature insects found in three leaf nests of the eastern fox squirrel, *Sciurus niger*. Proc. S.D. Acad. Sci. Vol. 50: 202-204.
- Easton, E.R. 1981. New geographical records for some fleas (Siphonaptera) from the Black Hills of South Dakota. Ent. News 92(1): 45-47.
- Holland, G.P. 1957. Notes on the genus *Hystrichopsylla* Rothschild in the New World, with descriptions of one new species and two new subspecies (Siphonaptera: Hystrichopsylla). Can. Ent. 89: 309-324.
- Johnson, P.T. 1961. A revision of species of *Monopsyllus* Kolenati in N. Amer. ARS, USDA Tech. Bull. No. 1227.
- Johnson, P.T. and R. Traub. 1954. Revision of the flea genus *Peromyscopsylla*. Smithsonian Misc. Coll. 123: 1-68.
- King, J.A. 1955. Social behavior, social organization and population dynamics in a black-tailed prairie dog town in the Black Hills of South Dakota. Contrib. Lab. Vert. Biol., Univ. Michigan, 67: 1-123.
- Kohls, G.M. 1940. Siphonaptera: A study of the species infesting wild hares and rabbits of North America north of Mexico. Nat. Inst. Hlth. Bull. 175: 1-34, 3 plates.
- Prince, F.M. 1943. Report on the fleas *Opisocrostis bruneri* and *Thrassis bacchi* as vectors of plague. Public Health Reports. 58: 1013-1016.
- Stark, H.E. 1970. A revision of the flea genus *Thrassis* Jordon 1933 (Siphonaptera: Ceratophyllidae) with observations on ecology and relationship to plague. Univ. Cal. Publ. Entomol. No. 53, Univ. Cal. Berkeley.
- Turner, R.W. 1974. Mammals of the Black Hills of the South Dakota and Wyoming. University of Kansas Mus. Nat. Hist. Mis. Publ. No. 60. 178 pp.
- Wilson, N. 1978. Four ectoparasites from South Dakota. Ent. News 89:2 and 3, 77-78.